Bhagwan Mahavir College of Engineering & Technology, Surat

Computer engineering (5th semester)

Analysis and designs of algorithm

Assignment-3

1. What is dynamic programming? Give general method of dynamic programming.
2. Explain how dynamic programming is applied to assembly line solution with example.
3. State principal of optimality. & solve following knapsack using dynamic method.
   The capacity of knapsack is W=5.

item	weight	value
1	2	3
2	3	5
3	4	4
4	5	6

4. Explain how to find out LCS of following strings using dynamic programming.

   X=abbacdcba
   Y=bcdbbcaac

5. Give optimal substructure for make change problem. Consider an instance of such a problem with coins 1, 4 and 6 units. Illustrate its solutions using dynamic programming approach involving a payment of 8 units or less.
6. Consider the chain of matrices A1, A2..., A6 with the dimensions given below. Give the optimal parenthesization to get the productA2...A5

Matrix	Dimensions
A1	30 X 35
A2	35 X 15
A3	15 X 5
A4	5 X 10
A5	10 X20
A6	20 X25

7. Write down algorithm for N queen's problem n solve following.

   Generate at least 3 solutions for 5-queen's problem. The solutions are as given below

1	2	3	4	5
Q				
		Q		
				Q
	Q			
			Q	

Solution 1 (1, 3, 5, 2, 4)

8. Write down algorithm for knapsack problem using backtracking. Write 3 conditions for preconditioning.
9. Draw one figure that has articulation point & biconnected components.

   Define following.

   1. Articulation point
   2. GRAPH, directed, undirected graph
   3. Biconnected components
10. Write algorithm of Breath first search and Depth first search.

Last Date to submit: 31/08/2017